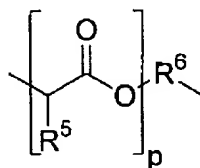
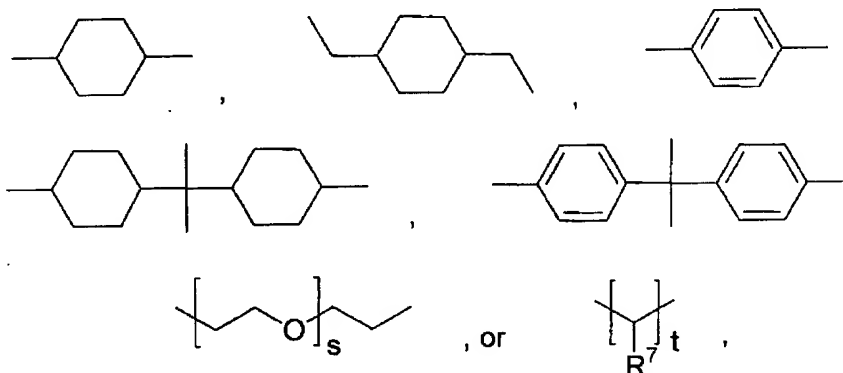


Application No. 09/854,435

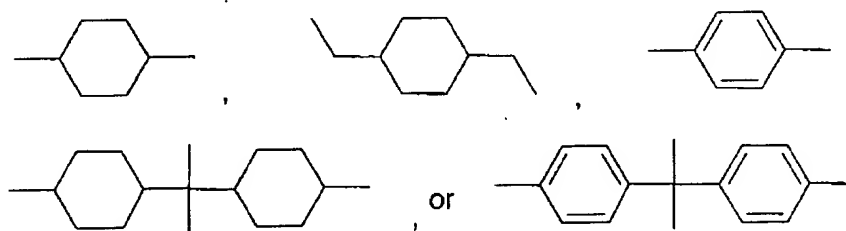
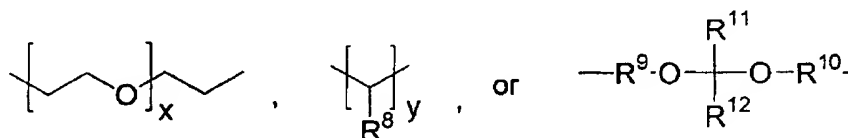
Page 3

 R^1 is:

where:

 p is an integer of 1 to 20; R^5 is hydrogen or C_{1-4} alkyl; and R^6 is:

where:

 s is an integer of 0 to 30; t is an integer of 2 to 200; and R^7 is hydrogen or C_{1-4} alkyl; R^2 is: R^3 is:

where:

Application No. 09/854,435

Page 4

x is an integer of 0 to 30;

y is an integer of 2 to 200;

R⁸ is hydrogen or C₁₋₄ alkyl;

R⁹ and R¹⁰ are independently C₁₋₁₂ alkylene;

R¹¹ is hydrogen or C₁₋₆ alkyl and R¹² is C₁₋₆ alkyl; or R¹¹ and R¹² together are C₃₋₁₀ alkylene; and

R⁴ is a diol containing at least one functional group independently selected from the group consisting of amide, imide, urea, and urethane groups;

in which at least 0.1 mol% of the A units are R¹, and at least 0.1 mol% of the A units are R⁴.

5. (Amended) The polyorthoester of Claim 1 which comprises about 1 to about 50 mole percent of units in which A is R¹.

6. (Amended) The polyorthoester of Claim 5 which comprises about 2 to about 30 mole percent of units in which A is R¹.

7. (Amended) The polyorthoester of Claim 6 which comprises about 5 to about 30 mole percent of units in which A is R¹.

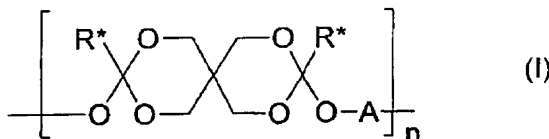
8. (Amended) The polyorthoester of Claim 7 which comprises about 10 to about 30 mole percent of units in which A is R¹.

12. (Amended) The polyorthoester of Claim 1 where R³ is hydrogen or methyl.

13. (Amended) The polyorthoester of Claim 1 which comprises up to about 20 mole percent of units in which A is R².

14. (Amended) The polyorthoester of Claim 1 which comprises about 60 to about 99.9 mole percent of units in which A is R².

17. (Amended) A process of preparing a polyorthoester of formula I:



where:

R* is a C₁₋₄ alkyl;

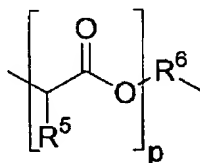
Application No. 09/854,435

Page 5

n is an integer of at least 5; and

A is R¹, R², R³, or R⁴, where

R¹ is:

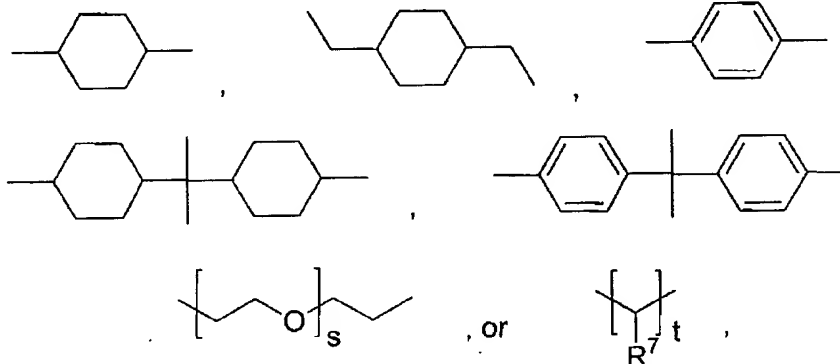


where:

p is an integer of 1 to 20;

R⁵ is hydrogen or C₁₋₄ alkyl; and

R⁶ is:



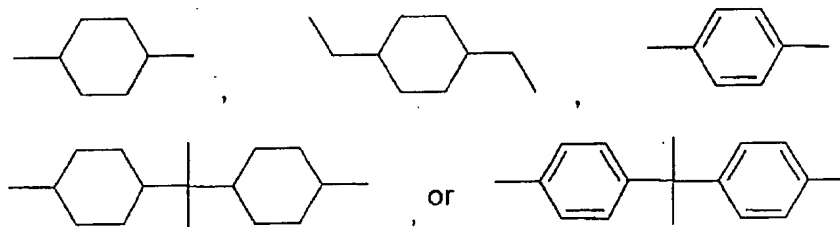
where:

s is an integer of 0 to 30;

t is an integer of 2 to 200; and

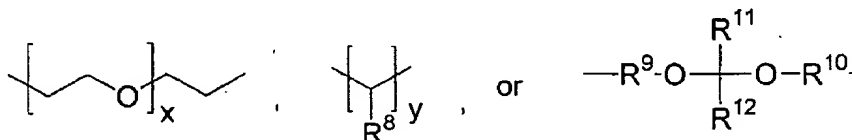
R⁷ is hydrogen or C₁₋₄ alkyl;

R² is:



Application No. 09/854,435

Page 6

R³ is:

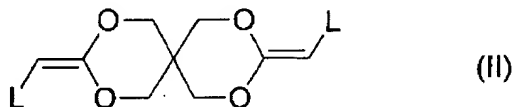
where:

x is an integer of 0 to 30;

y is an integer of 2 to 200;

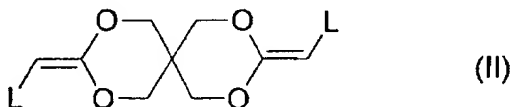
R⁸ is hydrogen or C₁₋₄ alkyl;R⁹ and R¹⁰ are independently C₁₋₁₂ alkylene;R¹¹ is hydrogen or C₁₋₆ alkyl and R¹² is C₁₋₆ alkyl; or R¹¹ and R¹² together are C₃₋₁₀ alkylene; andR⁴ is a diol containing at least one functional group independently selected from the group consisting of amide, imide, urea, and urethane groups;in which at least 0.1 mol% of the A units are R¹, and at least 0.1 mol% of the A units are R⁴,

the process comprising reacting a diketene acetal of formula II:

where L is hydrogen or a C₁₋₃ alkyl,with a diol of the formula HO-R¹-OH and a diol of the formula HO-R⁴-OH, and optionally at least one diol of the formulae HO-R²-OH and HO-R³-OH.

18. (Amended) A polyorthoester that is the product of a reaction between:

(a) a diketene acetal of formula II:

where L is hydrogen or a C₁₋₃ alkyl, and(b) a polyol or mixture of polyols in which at least 0.1 mole percent of the total polyol content is a diol of the formula HO-R¹-OH, where